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(54) **Communication system architecture, exchange and method of operation**

(57) To reduce the complexity, size and power dissipation associated with the deployment of xDSL-type modems in distribution points (140-142) of a telecommunications network, a transparent concentrating optical transmission scheme is interposed between an exchange (100) and a subscriber terminal (210). Specifically, xDSL-type modems (102-104 and 220-224) are employed both within the exchange (100) and, nominally, each subscriber terminal (102) of the telecommunication system, while an optical fibre supports the trans-

mission of frequency division multiplexed broadband signals sent between the exchange (100) and the distribution points (140-142). Twisted-pairs then couple respective broadband signals received and demultiplexed at the distribution points (140-142) to appropriately addressed subscriber terminals (210), while upstream transmissions are subjected to a complementary process from the xDSL modems (220-224) in the subscriber terminals (210) to the xDSL modems (220-224) in the exchange (100).

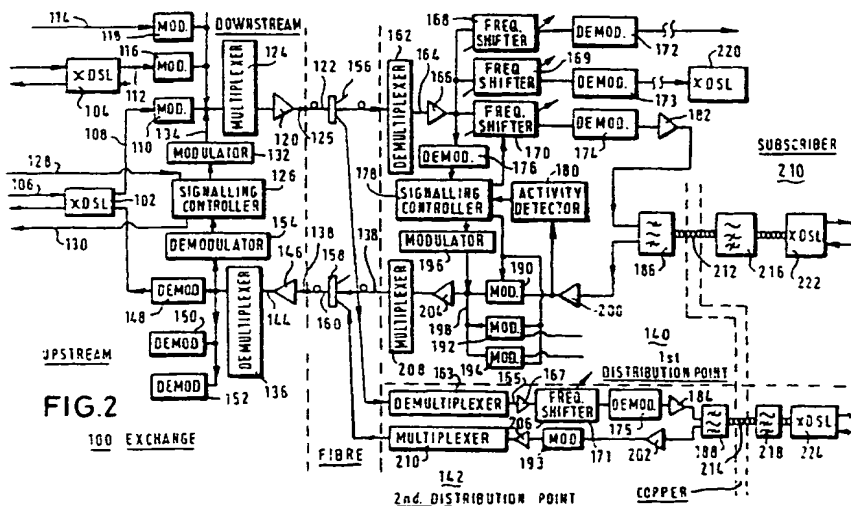


FIG. 2

100 EXCHANGE

2nd DISTRIBUTION POINT

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# EUROPEAN SEARCH REPORT

Application Number  
EP 98 30 9101

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	US 5 534 912 A (KOSTRESKI B W) 9 July 1996 (1996-07-09) * column 2, line 40 - column 6, line 45 * * column 8, line 36 - line 43 *	1-7, 10-14	H04Q11/04 H04Q3/58 H04M11/06
Y	---	8,9,15	
Y	MCCONNELL J S: "TO PON OR NOT TO PON? THAT IS THE QUESTION" TELEPHONY, vol. 222, no. 2, 14 January 1991 (1991-01-14), page 50,52,54,56 XP000472992 ISSN: 0040-2656 * the whole document *	8,9,15	
A	SPRUYT P ET AL: "EVOLUTION FROM ADSL TO VDSL: THE TECHNOLOGICAL CHALLENGES" PROCEEDINGS OF ISS'97, TORONTO, ONT, CANADA, vol. 1, 21 - 26 September 1997, pages 515-521, XP000720559 * abstract; figure 1 *	1,8,9, 11,15	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
D,A	US 5 668 857 A (MCHALE J F) 16 September 1997 (1997-09-16) * figure 1 * * column 10, line 50 - column 11, line 50 *	1-15	H04Q H04M
D,A	GB 2 215 943 A (STC PLC) 27 September 1989 (1989-09-27) * abstract *	1-15	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		14 February 2002	Vercauteren, S
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on or after the filing date D : document cited in the application L : document cited for other reasons S : member of the same patent family, corresponding document	

EP 0 917 392 A3 (PC-ACT)

# ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 9101

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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14-02-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5534912	A	09-07-1996	NONE	
US 5668857	A	16-09-1997	AU 2426997 A	22-10-1997
			CA 2250487 A	09-10-1997
			EP 0890254 A	13-01-1999
			US 2001043568 A	22-11-2001
			US 6282273 B	28-08-2001
			WO 9737458 A	09-10-1997
			US 6169788 B	02-01-2001
			US 5852655 A	22-12-1998
			US 6014431 A	11-01-2000
			US 5898761 A	27-04-1999
			US 5781617 A	14-07-1998
			US 6088430 A	11-07-2000
			US 5905781 A	18-05-1999
			US 6160843 A	12-12-2000
GB 2215943	A	27-09-1989	CN 1036867 A	01-11-1989
			EP 0333340 A	20-09-1989

EPO FORM FC/55

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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